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(54) Title: MOBILE TERMINAL HAVING NETWORK SERVICES ACTIVATION THROUGH THE USE OF POINT-TO-POINT SHORT MESSAGE SERVICE

(57) Abstract

A radiotelephone (10) includes a keypad (22) having a plurality of keys (22a, 22b) and a display device (20) for displaying information, including messages, to a user. A method includes the steps of: (a) transmitting a point-to-point short message service (SMS) message from an operator's site (36) through a network (32) to the radiotelephone; (b) receiving the SMS message from the network; (c) interpreting the received SMS message; and (d) activating a network service function that is specified in received SMS message. The method includes a preliminary step of transmitting a SMS message from the radiotelephone to the operator's site, the SMS message requesting activation of the network function.

MOBILE TERMINAL HAVING NETWORK SERVICES ACTIVATION
10   THROUGH THE USE OF POINT-TO-POINT SHORT MESSAGE SERVICE

FIELD OF THE INVENTION:

This invention relates generally to radiotelephones and, in
particular, to mobile terminals such as those capable of
operation with a cellular network.

15   BACKGROUND OF THE INVENTION:

Modern mobile terminals or mobile stations provide a number
of valuable features such as network-related functions.
These network-related functions can include call
forwarding, call waiting, and various roaming related
20   functions such as 'do not disturb'. As can be appreciated,
not all cellular system operators may support a range of
such features. As may also be appreciated, not all users
may wish to take advantage of (and pay additionally for)
these typically value added features.

25   In order to simplify the construction of the mobile
stations it is convenient to pre-program the unit with a
full complement of network-related and other functions.
However, only certain of these functions are initially
activated for use. By example, and assuming the mobile
30   station includes a display for displaying a menu of
available functions, only those functions that are
activated will appear in the menu. All other non-activated

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functions are not displayed in the menu and are thus "hidden" from the user.

It is known or proposed in the art that when a mobile terminal is first purchased for the dealer to connect a data port of the mobile station to a programming device, e.g., a computer, and to activate user-selected functions through the data port, with or without the cooperation with a microprocessor device that is internal to the mobile terminal. The particular functions can be defined by predetermined 'feature codes'. The user could also subsequently return to the dealer to have a certain function or functions activated after purchase. However, this procedure is inconvenient for the user.

It is known in the art, as evidenced by U.S. Patent No.: 5,371,782, to enable a cordless telephone handset to generate a service request that contains a specific carrier request code. The handset selectively identifies a public base unit served by a desired local service provider and establishes a communications link with the base unit. An alerting signal can also be generated for indicating to the user that a desired local service provider was not reached.

It is known in the art, as evidenced by U.S. Patent No.: 5,046,082, to provide a system allowing remote access to cellular telephone programming through the PSTN. The system includes a specifically configured, remotely accessible cellular telephone referred to as a RACT. The RACT includes a signal detection circuit configured to detect a unique identifying signal that the host system generates and that is not commonly found in conventional data communications traffic.

It is also known in the art, as evidenced by U.S. Patent No.: 5,276,729, to provide a radiotelephone that can be

remotely programmed through the use of DTMF signals.

It is also known in the art, as evidenced by European
Patent Application publication number: 0 630 167 A2, to
provide a personal communicator that can receive and store
5   a number assignment module (NAM). The NAM is received from
a cellular service provider, without having an authorized
agent manually program the personal communicator. The
personal communicator places a call to a service bureau
which receives the call. The call includes information
10   comprising the potential subscriber's credit information,
vendor identification, and electronic serial number (ESN).
In response, the service bureau encrypts the NAM and
transmits if for storage in the personal communicator.

The so-called Short Message Service (SMS) is a service
15   specified in modern cellular systems which enables a user
to send messages to, and receive text messages, from other
users of a communications (cellular) network. The SMS
attempts to deliver a message to a mobile terminal whenever
the terminal is registered to the network, even when the
20   terminal is engaged in a voice or data call. The terminal
may also roam throughout the network and still be capable
of sending and receiving messages. A terminal configured
for SMS provides methods for the user to receive, read,
write/edit, clear, send, and save messages. The connection
25   of a standard keyboard to the terminal facilitates the
generation and editing of text messages by the user.

One of the inventors of the subject matter of this patent
application has previously proposed a network service
feature code broadcast service, wherein short messages
30   within a fixed category channel of the Broadcast SMS would
contain one or multiple feature access strings and related
short alphanumeric name string which describes a particular
network feature (SMS.JEM/94.03.21., "Proposed new SMS

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services", S. Alanärä, March 22, 1994). This same inventor
has also proposed the use of a Feature/Service Code List
that would make the codes more accessible to users. This
service would provide a list of service/feature codes using
5   the E-BCCH. A receiving mobile station is said to be able
to extract the feature information to be usable as a
scrollable menu for user feature/service selection
(TR45.3.6/94.04.06.16, Digital Cellular Systems, "Proposed
Feature/Service Code List", S. Alanärä et al., April 5-7,
10   1994).

As may be appreciated, it is desirable to provide an
efficient and simple user interface to enable a user to
specify and request that a particular network feature or
15   service be activated, and further to provide an efficient
and simple mechanism to enable a network provider or
operator to remotely activate a specified feature.

OBJECTS OF THE INVENTION:

It is thus a first object of this invention to provide an
20   efficient and simple technique for enabling a user of a
mobile terminal to request and receive a network service.

It is a second object of this invention to provide a mobile
terminal having SMS capability, and that furthermore
provides a SMS user interface that enables a user to
25   generate a SMS message that requests an operator to
activate a selected mobile terminal function, the mobile
terminal further being capable of receiving a point-to-
point SMS message from the operator that activates the
selected mobile terminal function.

30   SUMMARY OF THE INVENTION

The foregoing and other problems are overcome and the

objects of the invention are realized by methods and apparatus in accordance with embodiments of this invention. A method of this invention is disclosed for operating a user terminal, such as a cellular radiotelephone, of a type

5   that is bidirectionally coupled to a network through an RF interface. The cellular radiotelephone includes a keypad having a plurality of keys and a display device for displaying information, including messages, to a user. The method includes the steps of: (a) transmitting a point-to-

10   point short message service (SMS) message from an operator's site through a network (32) to the radiotelephone; (b) receiving the SMS message from the network; (c) interpreting the received SMS message; and (d) activating a network service function that is specified in

15   received SMS message. The method includes a preliminary step of transmitting a SMS message from the radiotelephone to the operator's site, the SMS message requesting activation of the network function.

Also disclosed is a method for operating a mobile terminal

20   of a type that is bidirectionally coupled to a network through a digital cellular interface, comprising the steps of (a) sending a short message service (SMS) from the network to the mobile terminal, the SMS message offering a service; (b) sending a reply to the SMS message from the

25   mobile terminal to the network, the reply containing data for indicating one of an acceptance of the offered service and a non-acceptance of the offered service; and (c) receiving the reply at the network and selectively one of activating the offered service for the mobile terminal and

30   not activating the offered service for the mobile terminal, in accordance with the data sent with the reply.

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BRIEF DESCRIPTION OF THE DRAWINGS

The above set forth and other features of the invention are
made more apparent in the ensuing Detailed Description of
the Invention when read in conjunction with the attached
5   Drawings, wherein:

Fig. 1 is a block diagram of a mobile terminal that is
constructed and operated in accordance with this invention;

Fig. 2 is an elevational view of the mobile terminal shown
in Fig. 1, and which further illustrates a cellular
10   communication system to which the mobile terminal is
bidirectionally coupled through wireless RF links;

Figs. 3A and 3B depict a content of the mobile terminal
memory both before (Fig. 3A) and after (Fig. 3B) the
15   activation of a network function in accordance with this
invention;

Fig. 4 is a logic flow diagram that illustrates a first
method of this invention; and

Fig. 5 is a logic flow diagram that illustrates a second
20   method of this invention.

DETAILED DESCRIPTION OF THE INVENTION

Reference is made to Figs. 1 and 2 for illustrating a
mobile terminal 10, in particular a cellular
radiotelephone, that is suitable for practicing this
25   invention. The mobile terminal 10 includes an antenna 12
for transmitting signals to and for receiving signals from
a base site or base station 30. The base station 30 is a
part of a cellular network 32 that includes a mobile
switching center (MSC) 34. The MSC 34 is capable of routing

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messages to and from the user terminal 10 when the user
terminal is registered with the network.

The mobile terminal includes a modulator (MOD) 14A, a
transmitter 14, a receiver 16, a demodulator (DEMOD) 16A,
5   and a controller 18 that provides signals to and receives
signals from the transmitter 14 and receiver 16,
respectively. These signals include signalling information
in accordance with the air interface standard of the
applicable cellular system, and also user speech and/or
10   user generated data. The air interface standard is assumed
for this invention to include a SMS capability, and in
particular to include a point-to-point SMS capability. That
is, a SMS message can be addressed to a specific mobile
terminal, although the mobile terminal may also be capable
15   of receiving and responding to broadcast (e.g., global)
messages that address a plurality of mobile terminals.

A user interface includes a conventional speaker 17, a
conventional microphone 19, a display 20, and a user input
device, typically a keypad 22, all of which are coupled to
20   the controller 18. The keypad 22 includes the conventional
numeric (0-9), alphanumeric and related keys (#,*) 22a, and
also other keys 22b used for operating the mobile terminal
10. These other keys 22b may include, by example, a SEND
key, various menu scrolling and soft keys, and a PWR key.

25   The mobile terminal 10 also includes various memories,
shown collectively as the memory 24, wherein are stored a
plurality of constants and variables that are used by the
controller 18 during the operation of the mobile terminal.
For example, the memory 24 stores the values of various
30   cellular system parameters and the number assignment module
(NAM). An operating program for controlling the operation
of controller 18 is also stored in the memory 24 (typically
in a ROM device). The memory 24 also stores data, including

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user messages, that are received from the cellular network 32 prior to the display of the messages to the user. The mobile terminal 10 also includes a battery 26 for powering the various circuits that are required to operate the
5   terminal.

It should be understood that the mobile terminal 10 can be a vehicle mounted or a handheld device. It should further be appreciated that the mobile terminal 10 can be capable of operating with one or more air interface standards,
10   modulation types, and access types. By example, the mobile terminal may be capable of operating in accordance with a frequency modulated (FM), frequency division multiple access (FDMA) transmission and reception standard, such as one known as EIA/TIA-553 (AMPS). The terminal may also be
15   capable of operating with any of a number of other analog or digital standards, such as GSM, EIA/TIA 627 (DAMPS), IS-136 (DDAMPS), and IS-95 (CDMA). Narrow-band AMPS (NAMPS), as well as TACS, mobile terminals may also benefit from the teaching of this invention. In general, the teaching of
20   this invention applies to any radiotelephone or pager user terminal that is capable of receiving a message from a system, that includes a display for displaying messages and a menu of mobile terminal functions to a user, and that furthermore includes a user input device, such as a keypad,
25   with which the user can generate messages and also interact with the displayed menu to select various mobile terminal functions. It should thus be clear that the teaching of this invention is not to be construed to be limited to any one particular type of mobile terminal or air interface
30   standard.

In general, the operating program in the memory 24 includes routines to present messages and message-related functions to the user on the display 20, typically as various menu items. The memory 24 also includes routines for

implementing the method described below in relation to
Figs. 3A, 3B and 4.

Reference is now made to Figs. 3A, 3B and 4 for
illustrating a first method in accordance with this
5   invention. The method will be described in the context of
one existing interim cellular digital standard (i.e., IS-
136) that provides a Short Message Service (SMS)
capability, although the teaching of this invention is not
limited for use only with this one particular interim
10   standard.

The IS-136 specification specifies the structure and
information elements of SMS messages in paragraphs 7.1-7.3
(IS-136.1, Rev. 0, 5/17/94, pp. 286-307). There is an
information element referred to in paragraph 7.2.1 as a
15   "User Data Unit", which is specified to carry a user text
message. One field of this information element is referred
to as an "Encoding Identifier". As is indicated on page
304, the Encoding Identifier field of the User Data Unit is
specified to be five bytes long (that is 32 possible
20   values). At present, the specification only specifies the
function of two values. All other values are reserved for
later use.

It should be noted that also within the scope of this
invention to use, in another embodiment, the higher layer
25   protocol identifier in the R-Data unit structure for this
purpose.   See, for example, IS-136, paragraph 6.5,
Information Element Description - R-Data Unit.

In accordance with a preferred, but not limiting,
embodiment of this invention, the Encoding Identifier field
30   is used to identify the SMS message as containing special
information targeted for use for software update purposes.
The SMS message contains two logical parts. A first part

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is a text part, which informs the user that by receiving
the message a new menu feature will appear on mobile
station's display 20. A second part (invisible to the
user), transfers the needed information elements to the
5   mobile station 10. Based on this information the mobile
station 10 activates the menu feature. These two parts
could be sent as two separate SMS messages, or as one SMS
message.

The following table is exemplary of the teaching of this
10   invention. These feature and corresponding feature codes
are as specified by the North American Cellular Network.

TABLE

Feature Name	Feature Code	Ident. Code
Roaming Do Not Disturb (activation)	*35	RND-A
Roaming Do Not Disturb (deactivation)	*350	RND-D
Call Forwarding Immed. (activation)	*71	CFI-A
Call Forwarding Immed. (deactivation)	*710	CFI-D
Call Forwarding Cond. (activation)	*72	CFC-A
Call Forwarding Cond. (deactivation)	*720	CFC-D
Call Forwarding Busy (activation)	*73	CFB-A
Call Forwarding Busy (deactivation)	*730	CFB-D
Call Forwarding No Ans. (activation)	*74	CFN-A
Call Forwarding No Ans. (deactivation)	*740	CFN-D
Call Waiting-cancel	*810	CW-C

35   The operator 36 sends to the mobile station 10 one of the
above-referenced identification codes to define which menu
function is to be activated, and also sends a corresponding
feature code. When the mobile station 10 receives the SMS
message it checks the "Encoding Identifier" field to see if
40   this is a software update SMS message. If it is, the
software then reads the corresponding "User Data" unit and

finds the code, which identifies the updated menu feature
and a corresponding feature code. The mobile station 10
then stores the feature code into a correct non-volatile
memory 24 location and the menu function is then enabled

5   for use.

Referring to Fig. 3A, there is illustrated a number of
functions and associated flags (F), some of which are
activated (/) and some of which are disabled (X). In the
example of Fig. 3A the call forwarding functions are

10 disabled and, as such, do not appear as menu items on the
mobile station's display 20. It should be realized,
however, that the various software modules required to
implement the call forwarding features may have been
programmed into the memory 24 when the mobile station 10

15 was first assembled and/or activated.

Fig. 3B illustrates the contents of the memory 24 after
receiving at least one SMS message from the operator's site
36, the SMS message conveying feature and identification
codes that cause the controller 18 to access the memory 24

20 and enable the call forwarding functions. After being so
enabled, the call forwarding functions appear in the
displayed menu, and are thus accessible for use by the user
of the mobile station 10.

Referring now to Fig. 4, at Block A the user sends a SMS

25 message, that identifies a function to be activated (or
possibly deactivated), to the network provider's site . A
special menu function can be used for this purpose, wherein
the user selects a desired function from a displayed list
of non-enabled functions, and wherein the mobile station in

30 response composes and transmits a suitable SMS message
identifying the selected function. In this manner the user
need not be aware of the underlying identifying codes and
the like. Furthermore, the telephone number of the operator

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site can be pre-programmed into the mobile station 10 at
the time that the mobile station is first activated for
use.

At Block B the operator site 36 receives and interprets the
SMS message. In this regard the operator site 36 includes
a database 36a of mobile stations and already activated
features associated with each of the mobile stations. The
operator site 36 authenticates the request for activating
a new function (the mobile station's identity can be
ascertained from information received with the message),
and updates the database 36a accordingly.

At Block C the operator site 36 composes a suitable SMS
message, as described above, and transmits same to the
mobile terminal 10 for activating the specified function.

At Block D the mobile station 10 receives the SMS message
from the operator site 36 and processes same to enable the
specified function to appear in the menu displayed on the
display 20.

In greater detail, the Block D includes the execution of
the following steps.

D-1. The mobile station receives the SMS message having an
Encoding Identifier field set for indicating that the SMS
message is a software (function) update message.

D-2. The mobile station 10 checks the Encoding Identifier
field. If the value is, for example 00011, the mobile
station 10 is informed that this is a special menu update
SMS message, and it is treated as such from this point. (In
this case the operator and phone manufacturer have
previously agreed that the value 00011 identifies the menu
update message.) If the Encoding Identifier field does not

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equal the predetermined value, the SMS message is displayed as a normal SMS message to the user.

D-3. The mobile station 10 reads the corresponding User Data field of the SMS message and locates the network
5   service identification code, for example CFC-A (Call Forwarding Conditional-Activation, and corresponding feature code, for example *72. Again, it is assumed that the operator and phone manufacturer have previously agreed that CFC-A indicates Call Forwarding Conditional-
10 Activation.

D-4. The mobile station 10 identifies the menu item to be enabled based on the network service identification code CFC-A. In this case the menu's Call Forwarding-Conditional item is enabled.

15 D-5. The mobile station 10 stores the feature code *72 into a non-volatile location in memory 24 dedicated for the specified menu item. As such, the displayed menu will now display this newly activated function, thereby enabling the user to gain access to this function.

20 In a further embodiment the identification code may be the actual menu text. That is, this mode of operation can be employed if there is no other functionality in the menu item than sending the feature code to the network. For example, Call Waiting activation is one such feature.

25 As can be appreciated, the use of this invention enables menu features to be both selectively activated and de-activated. Furthermore, the use of this invention does not require that non-standard signalling formats be implemented, as is the case in some prior art approaches.
30 Instead, this invention provides for simple enhancements to existing signalling formats (e.g., the SMS message format)

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to implement an efficient technique for selectively
enabling and disabling functions within a mobile terminal
or station.

Although described in the context of a mobile station
5   having a keypad for receiving input from a user, it is
within the scope of this invention to employ any suitable
type of user input interface. By example, if the mobile
terminal is connected to a computer, the feature selection
procedure can be accomplished using the computer's screen
10   and/or keyboard. Alternatively, a suitable mobile station
or computer voice recognition system can be employed for
performing this function.

Furthermore, and as was indicated previously, the teaching
15   of this invention is not limited for use with any one
particular type of message delivery protocol (such as the
one specified by IS-136).

It should also be appreciated that although the invention
has been described in the context of a method wherein the
20   mobile station 10 first calls the operator's site 36 to
request that a specific function be enabled, it is also
within the scope of this invention to compose and generate
a special message at the network operator's site without
first receiving a call from the mobile station. In this
25   case the network operator's site 36 can call the mobile
terminal 10 and selectively enable or disable a specific
function or functions. For example, a particular network
operator may decide to make a certain function available to
one or more selected mobile stations on a trial or
30   temporary basis. Also by example, the network operator may
decide, based on some criteria, to disable one or more
previously enabled network functions for a selected mobile
station. In either case, the network operator is enabled
to send the special SMS message, that selectively enables

or disables one or more functions, to a selected mobile
station without first receiving a message from the mobile
station.

In this case the mobile user may accept or reject the
network service. Thus the operator can promote new
services, e.g., "Do you want to subscribe to xxx? 1=yes,
2=no" and the user then sends an acknowledgment with a SMS
manual acknowledgment (1 or 2). This mode of operation is
illustrated in the flow chart of Fig. 5, wherein in Block
A the operator sends the SMS offering the service, and in
Block B the user decides whether to accept or reject the
offered service. In Block C the user replies with a SMS
manual acknowledgement (e.g., by depressing 1 to accept the
offered service or by depressing 2 to reject the offered
service). At Block D the operator receives the user's
manual acknowledgment and either activates the offered
service or does not activate the offered service, depending
upon the user's reply at Block C.

It is also within the scope of this invention for the user
to send a SMS message to the operator in order to request
a specific function or service to be enabled, i.e., a call
is not required.

It should be realized that the specific functions that were
described above are exemplary only. By example, other
functions that can be selectively activated and deactivated
using the special SMS message of this invention include,
but are not limited to, Call Delivery (CD), Call Transfer
(CT), Call Waiting (CW), Calling Number Identification
Restriction (CNIR), Conference Calling (CC), Flexible
Alerting (FA), Message Waiting Notification (MWN),
Preferred Language (PL), Subscriber PIN Access (SPINA) and
Voice Message Retrieval (VMR).

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Thus, while the invention has been particularly shown and
described with respect to preferred embodiments thereof, it
will be understood by those skilled in the art that changes
in form and details may be made therein without departing
5   from the scope and spirit of the invention.

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CLAIMS

What is claimed is:

1. A method for operating a mobile terminal of a type that is bidirectionally coupled to a network through a wireless interface, comprising the steps of:

receiving at least one message from the network, the message being addressed to the mobile terminal;

determining if the at least one message is a special message from a network operator that specifies one of enabling or disabling a mobile terminal function; and

if the at least one message is determined to be a special message, storing data within a memory of the mobile terminal, the stored data selectively one of enabling and disabling a mobile terminal function that is also specified by the special message.

2. A method as set forth in claim 1, wherein the step of storing data includes a further step of displaying a message to a user of the mobile terminal, the message identifying the mobile terminal function.

3. A method as set forth in claim 1, and further comprising the initial steps of:

selecting a function at the mobile terminal;

composing a message that identifies the selected function;

calling a network operator site and delivering the message during the call;

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interpreting the message at the network operator's site and composing the special message in response to the interpreted message; and

forwarding the special message from the network operator's site to the mobile terminal.

4. A method as set forth in claim 1, wherein the special message is a Short Message Service message having one field for identifying the SMS message as a special message.

5. A method as set forth in claim 4, wherein the SMS message has at least one other field for identifying a predetermined Feature Code and a predetermined Identification Code that are both associated with the function.

6. A user terminal of a type that is bidirectionally coupled to a network through a wireless interface, comprising:

means for receiving at least one message from the network, the message being addressed to the mobile terminal; and

control means for determining if the at least one message is a special message from a network operator that specifies one of enabling or disabling a mobile terminal function, and if the at least one message is determined to be a special message, for storing data within a memory of the mobile terminal, the stored data selectively one of enabling and disabling a mobile terminal function that is also specified by the special message.

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7. A user terminal as set forth in claim 6, and further comprising a display means for displaying a message to a user of the mobile terminal, the message identifying the mobile terminal function.

8. A user terminal as set forth in claim 6, and further comprising:

   user interface means for selecting a function at the mobile terminal, said control means being responsive to the selected function for composing a message that identifies the selected function; and

   means for contacting a network operator site and for delivering the message to the network operator site.

9. A user terminal as set forth in claim 8, wherein the network operator's site is comprised of means for interpreting the message and composing the special message in response to the interpreted message.

10. A user terminal as set forth in claim 6, wherein the special message is a Short Message Service message having one field for identifying the SMS message as a special message.

11. A user terminal as set forth in claim 10, wherein the SMS message has at least one other field for identifying a predetermined Feature Code and a predetermined Identification Code that are both associated with the function.

12. A method for operating a mobile terminal of a type that is bidirectionally coupled to a network through a digital cellular interface, comprising the steps of:

receiving at least one Short Message Service message
from the network, the SMS message being addressed to
the mobile terminal;

determining if the at least one SMS message is a
special SMS message from a network operator that
specifies one of enabling or disabling a mobile
terminal function, wherein the special SMS message has
at least one field for identifying the SMS message as
a special SMS message; and

if the at least one SMS message is determined to be a
special SMS message, storing data within a memory of
the mobile terminal, the stored data selectively one
of enabling and disabling a mobile terminal function
that is also specified by the special SMS message,
wherein the special SMS message has a User Data field
having information for identifying a predetermined
Feature Code and a predetermined Identification Code
that are both associated with the function, and
wherein the mobile terminal stores the predetermined
Feature Code into the memory, and displays the
predetermined Identification Code to a user.

13. A method as set forth in claim 12, and further
comprising the initial steps of:

selecting a function at the mobile terminal;

composing a SMS message that identifies the selected
function;

calling a network operator site and delivering the SMS
message during the call;

interpreting the SMS message at the network operator's

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site and composing the special SMS message in response
to the interpreted message; and

forwarding the special SMS message from the network
operator's site to the mobile terminal.

14. A method as set forth in claim 12, wherein the
step of storing includes a step of making the function
become visible as a menu item in a menu of functions that
are displayed to the user.

15. A method for operating a mobile terminal of a type
that is bidirectionally coupled to a network through a
digital cellular interface, comprising the steps of:

sending a short message service (SMS) from the network
to the mobile terminal, the SMS message offering a
service;

sending a reply to the SMS message from the mobile
terminal to the network, the reply containing data for
indicating one of an acceptance of the offered service
and a non-acceptance of the offered service; and

receiving the reply at the network and selectively one
of activating the offered service for the mobile
terminal and not activating the offered service for
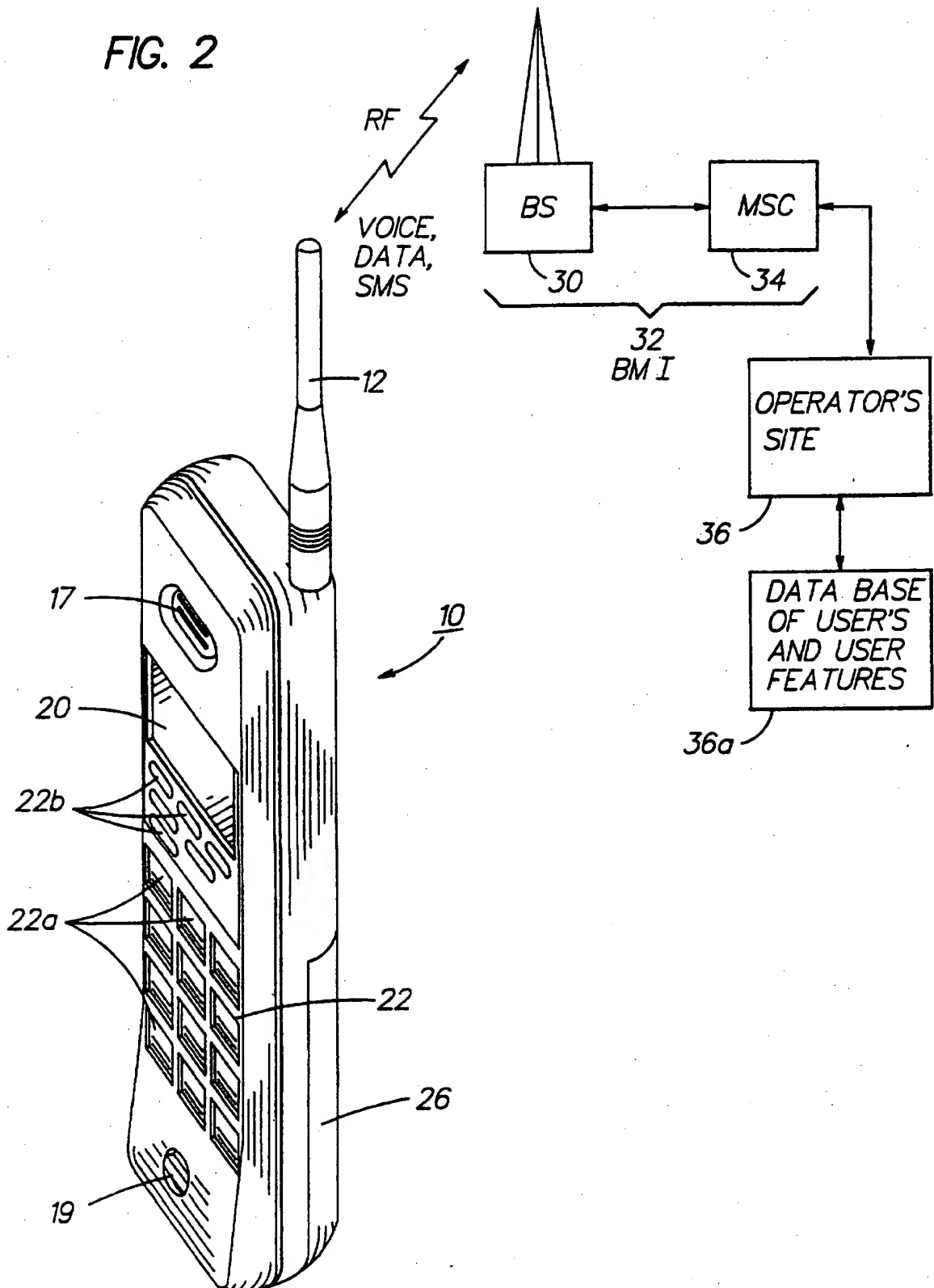the mobile terminal, in accordance with the data sent
with the reply.

FIG. 1
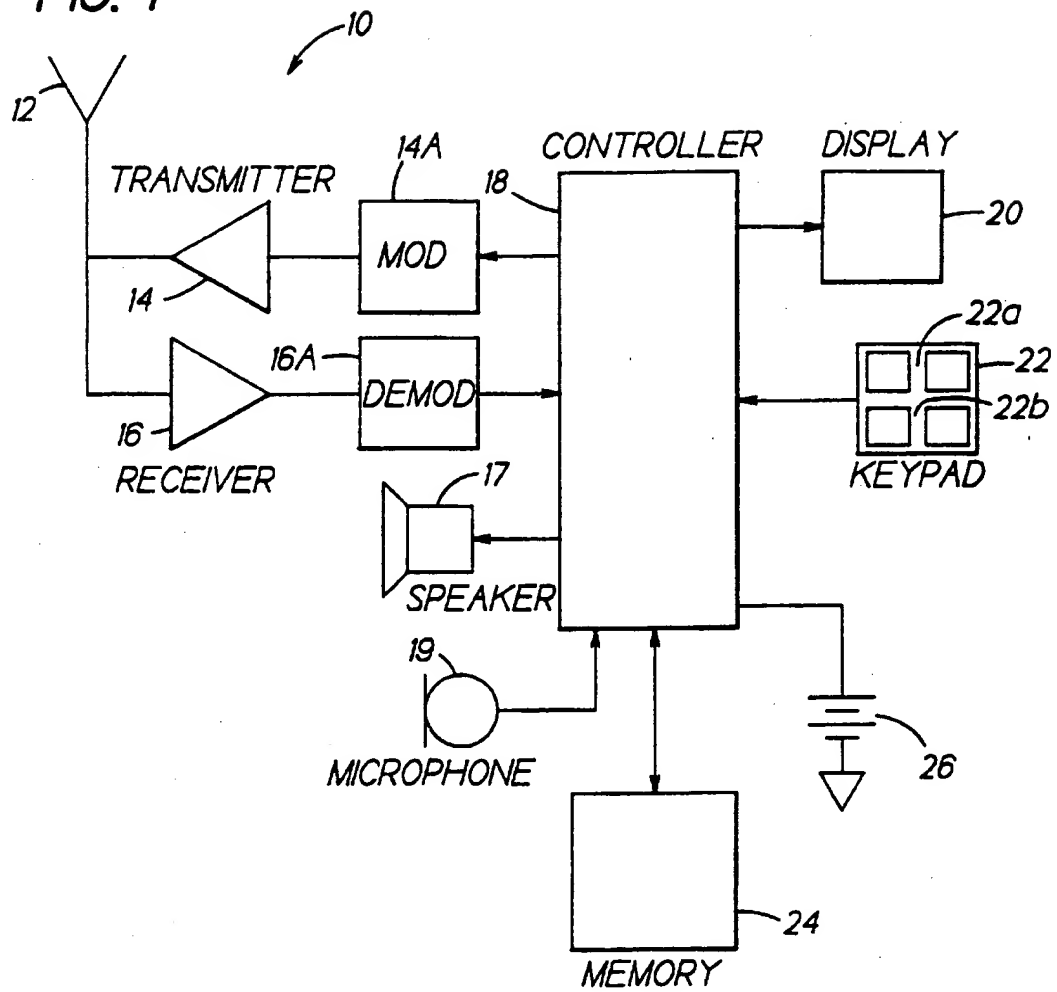
FIG. 2

FIG. 3A

MAIN MENU
F   PART OF
MEMORY 24

＼	MEMORY OPTIONS
＼	MESSAGES
＼	PHONE SETTINGS
＼	NETWORK SERVICES
＼	CALL WAITING
＼	SEND OWN NUMBER
✕	CALL FORWARDING
✕	FORWARD ALL
✕	IF NO REPLY
✕	IF NOT REACHABLE
✕	CANCEL FORWARDING

＼ = ENABLED   ✕ = DISABLED

FIG. 3B

MAIN MENU
F   PART OF
MEMORY 24

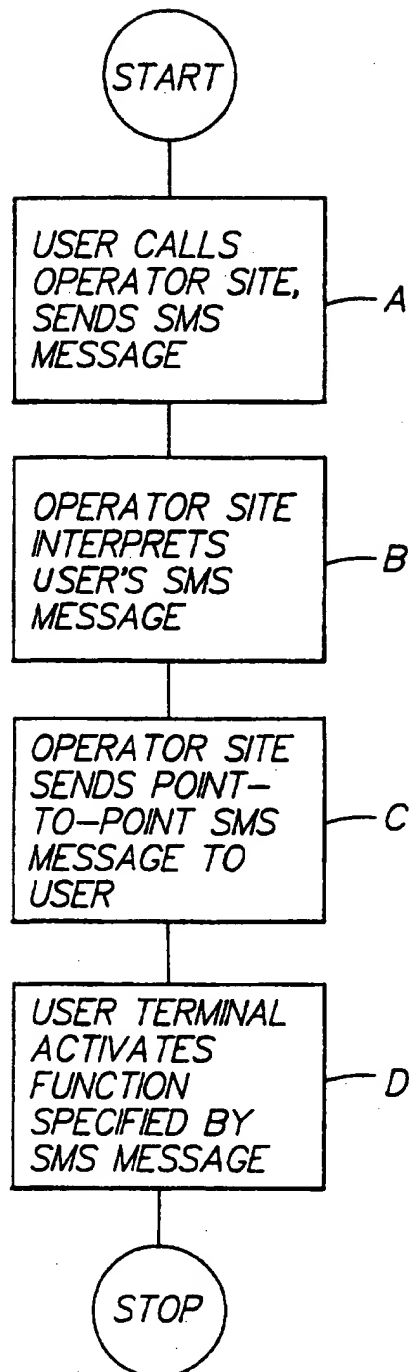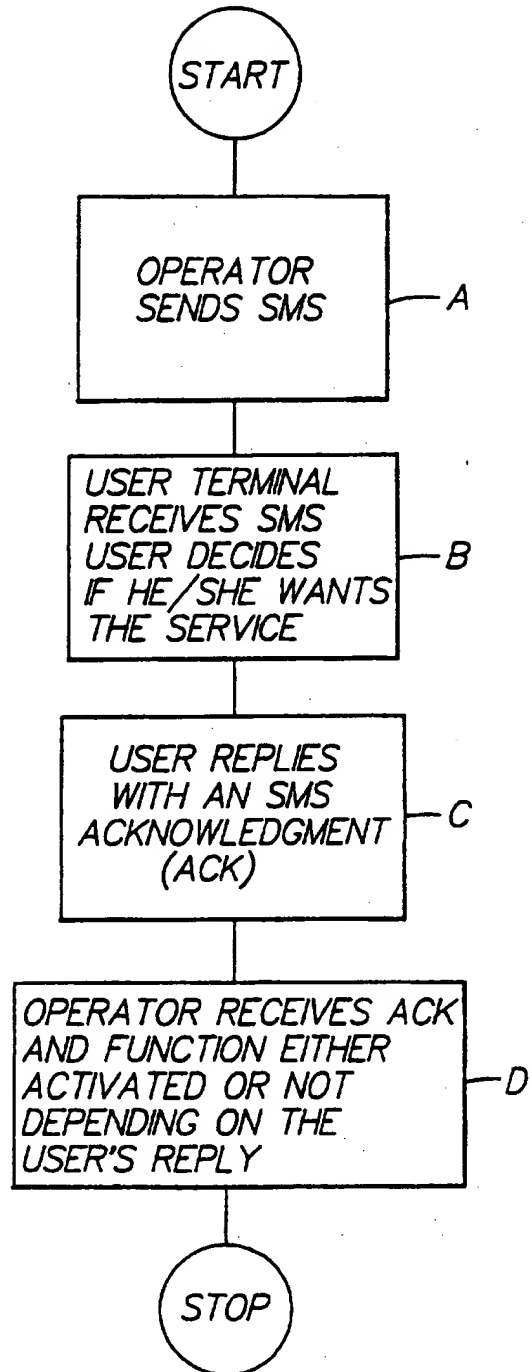|	
＼	MEMORY OPTIONS
＼	MESSAGES
＼	PHONE SETTINGS
＼	NETWORK SERVICES
＼	CALL WAITING
＼	SEND OWN NUMBER
＼	CALL FORWARDING
＼	FORWARD ALL
＼	IF NO REPLY
＼	IF NOT REACHABLE
＼	CANCEL FORWARDING

＼ = ENABLED   ✕ = DISABLED

FIG. 4

START

| USER CALLS OPERATOR SITE, SENDS SMS MESSAGE | — A |

| OPERATOR SITE INTERPRETS USER'S SMS MESSAGE | — B |

| OPERATOR SITE SENDS POINT-TO-POINT SMS MESSAGE TO USER | — C |

| USER TERMINAL ACTIVATES FUNCTION SPECIFIED BY SMS MESSAGE | — D |

STOP

FIG. 5

START

| OPERATOR SENDS SMS | — A |

| USER TERMINAL RECEIVES SMS USER DECIDES IF HE/SHE WANTS THE SERVICE | — B |

| USER REPLIES WITH AN SMS ACKNOWLEDGMENT (ACK) | — C |

| OPERATOR RECEIVES ACK AND FUNCTION EITHER ACTIVATED OR NOT DEPENDING ON THE USER'S REPLY | — D |

STOP

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :H04Q 7/22

US CL :379/59

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 379/59, 58, 63; 455/33.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

NONE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, 5,404,580 A (SIMPSON ET AL) 04 April 1995, Col. 5;10-20.	14
A	US, 5,479,476 A (FINKE-ANLAUFF) 26 December 1995, see whole document.	1-15
Y	US, 5,485,505 A (NORMAN ET AL) 16 January 1996, Col. 5;5-15, Col. 12;45-65.	2, 7
A	US, 5,351,235 A (LAHTINEN) 27 September 1994, see whole document.	1-15
Y, P	US, 5,577,103 A (FOTI) 19 November 1996, Col. 3;20-45.	15
X, P ----	US, 5,603,084 A (HENRY, JR. ET AL) 11 February 1997, Col. 6;20-58, Col. 7;3-38, Col. 7;50-Col. 8;9, Col. 8;18-48,	1-3, 6-9 ---------
Y, P	Fig. 1	1-14

X	Further documents are listed in the continuation of Box C.	☐ See patent family annex.

•	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance		
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 MARCH 1997	**24 APR 1997**

Name and mailing address of the ISA/US	Authorized officer
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Form PCT/ISA/210 (second sheet)(July 1992)*

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, P	US, 5,588,042 A (COMER) 24 December 1996, Col. 18;22-38.	15
Y	IS-136.1 REV 0 Standard, SMS Cellular Messaging Teleservice (CMT), 17 May 1995, pages 291 & 294.	4-5, 10-14